Docket No.: 82174673

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	10/797,152
Applicants:	:	Sujata Banerjee, et al.
Filed:	:	March 11, 2004
TC/A.U.	:	2453
Examiner:	:	Randy A. Scott
Title	:	REQUESTING A SERVICE FROM A MULTICAST NETWORK

APPEAL BRIEF

MS APPEAL BRIEF-PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir or Madame:

This brief, in compliance with 37 C.F.R. § 41.37, is in furtherance of the Notice of Appeal filed under 37 C.F.R. § 41.31 filed September 2, 2011.

This brief is accompanied by the fee set forth in 37 CFR § 41.20(b)(2), as described in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37:

I. Real Party In Interest

II. Related Appeals and Interferences

III. Status of Claims

IV. Status of Amendments

V. Summary of Claimed Subject Matter

VI. Grounds of Rejection to be Reviewed on Appeal

VII. Argument

VIII. Claims Appendix

IX. Evidence Appendix

X. Related Proceedings Appendix

The last page of this brief bears the attorney's signature.

I. REAL PARTY IN INTEREST

The real parties in interest for this appeal are:

The Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

II. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals or interference proceedings.

III. STATUS OF CLAIMS

A. Total Claims: 1-37

B. Current Status of Claims:

1. Claims canceled: 8-9, 29, 37
2. Claims withdrawn: 13-18, 30-34
3. Claims pending: 1-7, 10-12, 19-28, 35-36
4. Claims allowed: None
5. Claims rejected: 1-7, 10-12, 19-28, 35-36
6. Claims objected to: None

C. Claims on Appeal: 1-7, 10-12, 19-28, 35-36

IV. STATUS OF AMENDMENTS

No claims have been amended, canceled or added subsequent to the Final Office Action of July 15, 2011. The claims in the attached Claims Appendix reflect the present state of Appellants' claims.

V. SUMMARY OF CLAIMED SUBJECT MATTER

A. Independent Claim 1

Independent claim 1 recites a method of searching for at least one of a service path (page 2, lines 1-5; page 4, lines 10-28; page 5, line 5; page 6, line 23; page 7, lines 12-15; page 18, lines 7-22; page 19, lines 1-23; Figure 6) and a service node (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) operable to provide a requested service via a multicast tree, the method comprising:

receiving a request for at least one service (page 1, lines 9-15, 18-24; page 3, lines 1-10; page 4, lines 3-5; Figure 6);

searching stored information at a node receiving the request for at least one of a service path (page 2, lines 1-5; page 4, lines 10-28; page 5, line 5; page 6, line 23; page 7, lines 12-15; page 18, lines 7-22; page 19, lines 1-23; Figure 6) and a service node (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) operable to provide the requested service (page 1, lines 9-15, 18-24; page 3, lines 1-10; page 4, lines 3-5; Figure 6);

searching the stored information to identify a plurality of service nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) operable to provide the requested service (page 1, lines 9-15, 18-24; page 3, lines 1-10; page 4, lines 3-5; Figure 6) in response to a service path (page 2, lines 1-5; page 4, lines 10-28; page 5, line 5; page 6, line 23; page 7, lines 12-15; page 18, lines 7-22; page 19, lines 1-23; Figure 6) not existing that is operable to provide the requested service; and

applying a clustering algorithm (page 4, line 23; page 21, lines 4-15; page 22, lines 6-23; page 28, line 17) to the plurality of service nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) to identify a set of candidate service nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) from the plurality of service nodes closest to a node requesting the service (page 1, lines 9-15, 18-24; page 3, lines 1-10; page 4, lines 3-5; Figure 6)

and to further reduce the size of the set of candidate service nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11), and

wherein the information is stored in the node (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) by

receiving location information (page 4, line 9; page 8, lines 15-18; page 9, lines 5-7; page 10, lines 1-7, 18-25; page 11, lines 1-5, 22; page 13, lines 7-10; page 16, lines 18-22; Figure 5) for the plurality of nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11);

receiving information associated with services (page 1, lines 9-15, 18-24; page 3, lines 1-10; page 4, lines 3-5; Figure 6) provided by the plurality of nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11); and

storing the location information (page 4, line 9; page 8, lines 15-18; page 9, lines 5-7; page 10, lines 1-7, 18-25; page 11, lines 1-5, 22; page 13, lines 7-10; page 16, lines 18-22; Figure 5) and the information associated with services (page 1, lines 9-15, 18-24; page 3, lines 1-10; page 4, lines 3-5; Figure 6).

B. Independent Claim 19

Independent claim 19 recites a method of storing information in a node (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) in an application layer multicast network, wherein the method comprises:

receiving location information (page 4, line 9; page 8, lines 15-18; page 9, lines 5-7; page 10, lines 1-7, 18-25; page 11, lines 1-5, 22; page 13, lines 7-10; page 16, lines 18-22; Figure 5) for a plurality of nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11);

receiving information associated with services provided by the plurality of nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11);

storing the location information (page 4, line 9; page 8, lines 15-18; page 9, lines 5-7; page 10, lines 1-7, 18-25; page 11, lines 1-5, 22; page 13, lines 7-10; page 16, lines 18-22; Figure 5) and the information associated with services (page 1, lines 9-15, 18-24; page 3, lines 1-10; page 4, lines 3-5; Figure 6) in a table, wherein the location information (page 4, line 9; page 8, lines 15-18; page 9, lines 5-7; page 10, lines 1-7, 18-25; page 11, lines 1-5, 22; page 13, lines 7-10; page 16, lines 18-22; Figure 5) for the plurality of nodes comprises distances measured from each of the plurality of nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) to a plurality of global landmark nodes (page 2, lines 14-16; page 9, lines 6-18; page 10 lines 5-19; page 11, lines 2-23, page 13, lines 1-20; page 15, lines 15-20; page 16, lines 7-15; page 17, lines 3-5; page 20, lines 3-5) and to at least one local landmark node (page 2, line 15; page 9, lines 8-16; page 10, lines 1-19; page 11, lines 3-18; page 12, lines 1-20), and the at least one local landmark node (page 2, line 15; page 9, lines 8-16; page 10, lines 1-19; page 11, lines 3-18; page 12, lines 1-20) is on a routing path (page 12, lines 6-10; page 13, lines 5-6; page 26, lines 7-8; page 26, lines 12-16) to one of the global landmark nodes (page 2, lines 14-16; page 9, lines 6-18; page 10 lines 5-19; page 11, lines 2-23, page 13, lines 1-20; page 15, lines 15-20; page 16, lines 7-15; page 17, lines 3-5; page 20, lines 3-5);

searching stored information at the node (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) for at least one of a service path (page 2, lines 1-5; page 4, lines 10-28; page 5, line 5; page 6, line 23; page 7, lines 12-15; page 18, lines 7-22; page 19, lines 1-23; Figure 6) and a service node operable to provide the requested service (page 1, lines 9-15, 18-24; page 3, lines 1-10; page 4, lines 3-5; Figure 6) and to identify a plurality of service nodes operable to provide the requested service (page 1, lines 9-15, 18-24; page 3, lines 1-10; page 4, lines 3-5; Figure 6) in response to a service path (page 2, lines 1-5; page 4, lines 10-28; page 5, line 5; page 6, line 23; page 7,

lines 12-15; page 18, lines 7-22; page 19, lines 1-23; Figure 6) not existing that is operable to provide the requested service (page 1, lines 9-15, 18-24; page 3, lines 1-10; page 4, lines 3-5; Figure 6); and

applying a clustering algorithm (page 4, line 23; page 21, lines 4-15; page 22, lines 6-23; page 28, line 17) to the plurality of service nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) to identify a set of candidate service nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) from the plurality of service nodes closest to a node requesting the service (page 4, lines 14-22; page 5, lines 2-5; page 8, lines 10-15; page 18, lines 10-14; page 20, lines 8-12) and to further reduce the size of the set of candidate service nodes (page 4, lines 22-23; page 20, lines 8-10; page 20, lines 4-11; page 21, lines 1-4, 13-15; page 23, lines 5-6; page 24, lines 13-18).

C. Independent Claim 24

Independent claim 24 recites a node (page 2, lines 9-13; page 4, lines 4-22, Figures 1, 2, 5-7, 9) in a network comprising:

means for receiving a request for at least one service (page 4, lines 14-22; page 5, lines 2-5; page 8, lines 10-15; page 18, lines 10-14; page 20, lines 8-12), and

means for searching stored information at the node (page 2, lines 9-13; page 4, lines 4-22, Figures 1, 2, 5-7, 9) for at least one of a service path (page 2, lines 1-5; page 4, lines 10-28; page 5, line 5; page 6, line 23; page 7, lines 12-15; page 18, lines 7-22; page 19, lines 1-23; Figure 6) and a service node (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) operable to provide the requested service (page 4, lines 14-22; page 5, lines 2-5; page 8, lines 10-15; page 18, lines 10-14; page 20, lines 8-12), and the searching further comprises searching the stored information to identify a plurality of service nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) operable to provide the requested service in response to a service path (page 2, lines 1-5; page 4, lines 10-28; page 5, line 5; page 6, line 23; page 7, lines 12-15; page 18, lines 7-22; page 19,

lines 1-23; Figure 6) not existing that is operable to provide the requested service; and

means for applying a clustering algorithm (page 4, line 23; page 21, lines 4-15; page 22, lines 6-23; page 28, line 17) to the plurality of service nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) to identify a set of candidate service nodes (page 4, lines 22-23; page 20, lines 8-10; page 20, lines 4-11; page 21, lines 1-4, 13-15; page 23, lines 5-6; page 24, lines 13-18) from the plurality of service nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) closest to a node requesting the service (page 4, lines 14-22; page 5, lines 2-5; page 8, lines 10-15; page 18, lines 10-14; page 20, lines 8-12) and to further reduce the size of the set of candidate service nodes (page 4, lines 22-23; page 20, lines 8-10; page 20, lines 4-11; page 21, lines 1-4, 13-15; page 23, lines 5-6; page 24, lines 13-18).

D. Independent Claim 35

Independent claim 35 recites a non-transitory computer readable medium (page 33, line 11) storing computer software (page 33, line 11), the computer software comprising instructions performing:

receiving a request at a node (page 2, lines 9-13; page 4, lines 4-22; Figures 1, 2, 5-7, 9) for at least one service (page 4, lines 14-22; page 5, lines 2-5; page 8, lines 10-15; page 18, lines 10-14; page 20, lines 8-12);

searching stored information at the node (page 2, lines 9-13; page 4, lines 4-22; Figures 1, 2, 5-7, 9) for at least one of a service path (page 2, lines 1-5; page 4, lines 10-28; page 5, line 5; page 6, line 23; page 7, lines 12-15; page 18, lines 7-22; page 19, lines 1-23; Figure 6) and a service node (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) operable to provide the requested service (page 4, lines 14-22; page 5, lines 2-5; page 8, lines 10-15; page 18, lines 10-14; page 20, lines 8-12);

searching the stored information to identify a plurality of service nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page

18, lines 16-17; page 19, lines 9-11) operable to provide the requested service (page 4, lines 14-22; page 5, lines 2-5; page 8, lines 10-15; page 18, lines 10-14; page 20, lines 8-12) in response to a service path (page 2, lines 1-5; page 4, lines 10-28; page 5, line 5; page 6, line 23; page 7, lines 12-15; page 18, lines 7-22; page 19, lines 1-23; Figure 6) not existing that is operable to provide the requested service (page 4, lines 14-22; page 5, lines 2-5; page 8, lines 10-15; page 18, lines 10-14; page 20, lines 8-12); and

applying a clustering algorithm (page 4, line 23; page 21, lines 4-15; page 22, lines 6-23; page 28, line 17) to the plurality of service nodes (page 2, lines 2-5; page 6, lines 2-15; page 7, lines 11-20; page 11, lines 14-16; page 18, lines 16-17; page 19, lines 9-11) to identify a set of candidate service nodes (page 4, lines 22-23; page 20, lines 8-10; page 20, lines 4-11; page 21, lines 1-4, 13-15; page 23, lines 5-6; page 24, lines 13-18) from the plurality of service nodes closest to a node requesting the service (page 4, lines 14-22; page 5, lines 2-5; page 8, lines 10-15; page 18, lines 10-14; page 20, lines 8-12) and to further reduce the size of the set of candidate service nodes (page 4, lines 22-23; page 20, lines 8-10; page 20, lines 4-11; page 21, lines 1-4, 13-15; page 23, lines 5-6; page 24, lines 13-18).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether or not claims 1, 6-7, 12, 24, and 35 are unpatentable under 35 U.S.C. 130(a) as being obvious over Hahn et al (U.S. 2002/0152293), in view of Busche (U.S. Patent No. 5,805,593), in view of Alfonsi et al (U.S. Patent No. 5,491,690), further in view of Andrews et al (U.S. Patent No. 7,020,698).

B. Whether or not claims 2-5 are unpatentable under 35 U.S.C. 130(a) as being obvious over Hahn et al (U.S. 2002/0152293), in view of Busche (U.S. Patent No. 5,805,593), in view of Alfonsi et al (U.S. Patent No. 5,491,690), in view of Andrews et al (U.S. Patent No. 7,020,698), further in view of Aggarwal (U.S. 2004/0221154).

C. Whether or not claims 10-11 are unpatentable under 35 U.S.C. 130(a) as being obvious over Hahn et al (U.S. 2002/0152293), in view of Busche (U.S. Patent No. 5,805,593), in view of Alfonsi et al (U.S. Patent No. 5,491,690), in view of Andrews et al (U.S. Patent No. 7,020,698), further in view of Kumar (U.S. 2005/0122904).

D. Whether or not claims 19-20 are unpatentable under 35 U.S.C. 130(a) as being obvious over Hahn et al (U.S. 2002/0152293), in view of Busche (U.S. Patent No. 5,805,593), in view of Alfonsi et al (U.S. Patent No. 5,491,690), in view of Andrews et al (U.S. Patent No. 7,020,698), in view of Oom Temudo de Castro et al (U.S. 2005/0030904), further in view of Cloonan et al (U.S. Patent No. 5,345,444).

E. Whether or not claims 21-23 are unpatentable under 35 U.S.C. 130(a) as being obvious over Hahn et al (U.S. 2002/0152293), in view of Busche (U.S. Patent No. 5,805,593), in view of Alfonsi et al (U.S. Patent No. 5,491,690), in view of Andrews et al (U.S. Patent No. 7,020,698), in view of Oom Temudo de Castro et al (U.S. 2005/0030904), in view of Cloonan et al (U.S. Patent No. 5,345,444), further in view of Matsubara (U.S. 2004/0008687).

F. Whether or not claims 25-29 are unpatentable under 35 U.S.C. 130(a) as being obvious over Hahn et al (U.S. 2002/0152293), in view of Busche (U.S. Patent No. 5,805,593), in view of Alfonsi et al (U.S. Patent No. 5,491,690), in view of Andrews et al (U.S. Patent No. 7,020,698), further in view of Aggarwal (U.S.

2004/0221154).

VII. ARGUMENT

A. The Hahn et al (U.S. 2002/0152293), Busche (U.S. Patent No. 5,805,593), Alfonsi et al (U.S. Patent No. 5,491,690), and Andrews et al (U.S. Patent No. 7,020,698), independently or in combination, do not teach or suggest each element of independent claims 1, 24, and 35.

Claims 1, 6-7, 12, 24, and 35 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn, in view of Busche, in view of Alfonsi, further in view of Andrews. Appellants respectfully traverse the rejection as follows.

From Appellants' review, the Hahn reference appears to teach a find server interface function that can search DSD agent tables to retrieve a complete server route for a desired service (Paragraph [0067]). Hahn is cited in the Final Office Action dated July 15, 2011, as teaching receiving a client request (Page 2). Hahn further appears to teach a system wherein a gateway server can query a local DSD agent to determine a route to one or more host machines having a server instance that is capable of handling the client request (Paragraph [0010]). However, Hahn does not appear to teach or suggest, "applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service," as provided, in part, in independent claims 1, 24, and 25.

From Appellants' review, the Busche reference does not appear to cure the deficiencies of the Hahn reference. That is, the Hahn and Busche references, independently or in combination, do not each or suggest each limitation of independent claims 1, 24, and 25. The Busche reference is cited in the Final Office Action as teaching a method of searching the stored information to identify a plurality of service nodes (Page 3). From Appellants' review the Busche reference appears to teach a method where routing decisions may be based on service paths that will inevitably fail and which include other nodes that do appear in the setup trail as long as such nodes are not neighboring nodes (Column 5, lines 45-50).

However, the Hahn and Busche references, independently or in combination, do not appear to teach or suggest, "applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service," as provided, in part, in independent claims 1, 24, and 25.

From Appellants' review, the Alfonsi reference does not appear to cure the deficiencies of the Hahn and Busche references. That is, the Hahn, Busche and Alfonsi references, independently or in combination, do not teach or suggest each limitation of independent claims 1, 24, and 25. The Alfonsi reference is cited in the Final Office Action as teaching an algorithm for choosing a destination node that meets the quality of service requirements and determining the minimum hop and path length and an updated algorithm used to reduce the number of eligible nodes for path calculation (Page 4). However, the Hahn, Busche, and Alfonsi references, independently or in combination, do not appear to teach or suggest, "applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service," as provided, in part, in independent claims 1, 24, and 25.

The Final Office Action notes that Hahn, Busche, and Alfonsi fail to teach applying a clustering algorithm to the plurality of nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service (Pages 2-4). However, Page 4 of the Final Office Action cites Andrews as teaching the specified deficiencies (Col. 16, lines 33-38, "[Andrews] discloses utilizing a clustering algorithm to determine node distances").

From Appellants' review, the Andrews reference does not appear to cure the deficiencies of the Hahn, Busche, and Alfonsi references. That is, the Hahn, Busche, Alfonsi, and Andrews references, independently or in combination, do not teach or suggest each limitation of independent claims 1, 24, and 25. The Andrews reference appears to teach that *demand nodes* are requestors of a requested content (Col. 16, lines 27-30). Andrews also appears to teach that a *resource node* is a content server that satisfies the requests of the *demand nodes* (Col. 16, lines 30-32). Andrews further appears to teach that a distance from a *demand node* to a *resource*

node can be directly obtained from the output of the clustering algorithm (Column 16, lines 32-38). The Office Action appears to compare Andrews' clustering algorithm between a *demand node* (client cluster) and a *resource node* (cache) to Appellants' application of a clustering algorithm to a plurality of service nodes, as recited by independent claims 1, 24, and 25. Appellants respectfully submit that the *demand nodes* from Andrews are not analogous to the service nodes in independent claims 1, 24, and 25. The *demand nodes* of Andrews are capable of receiving a service from a *resource node*, but are unable to provide the received service to other nodes. Thus, Andrews appears to teach a method utilizing a clustering algorithm between a set of *demand nodes* that receive the service, and a set of *resource nodes* that provide the service (Column 16, lines 32-38). In contrast to the *demand nodes* described in Andrews, the service nodes described in Appellants' previously submitted specification describe service nodes as nodes that provide services to other service nodes and user nodes (Page 6, lines 18-19). Appellants' independent claims 1, 24, and 25 recite, in part, "applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service."

As such, the Hahn, Busche, Alfonsi, and Andrews references, independently or in combination, do not appear to teach or suggest each element in Appellants' independent claims 1, 24, and 25. Accordingly, Appellants respectfully request reconsideration and withdrawal of the §103(a) rejection with respect to independent claims 1, 24, and 25, as well as claims, 6-7, and 12, which depend from independent claim 1. For the purposes of this appeal, dependent claims 6-7, and 12, which depend from independent claim 1, discussed herein, are not argued independently, but shall stand or fall with independent claim 1.

B. The Hahn et al (U.S. 2002/0152293), Busche (U.S. Patent No. 5,805,593), Alfonsi et al (U.S. Patent No. 5,491,690), Andrews et al (U.S. Patent No. 7,020,698), and Aggarwal (U.S. 2004/0221154), independently or in combination, do not teach or suggest each element of independent claim 1.

For the purposes of this appeal, dependent claims 2-5, which depend from independent claim 1, discussed herein, are not argued independently, but shall stand or fall with independent claim 1.

C. The Hahn et al (U.S. 2002/0152293), Busche (U.S. Patent No. 5,805,593), Alfonsi et al (U.S. Patent No. 5,491,690), Andrews et al (U.S. Patent No. 7,020,698), and Kumar (U.S. 2005/0122904), independently or in combination, do not teach or suggest each element of independent claim 1.

For the purposes of this appeal, dependent claims 10-11, which depend from independent claim 1, discussed herein, are not argued independently, but shall stand or fall with independent claim 1.

D. The Hahn et al (U.S. 2002/0152293), Busche (U.S. Patent No. 5,805,593), Alfonsi et al (U.S. Patent No. 5,491,690), Andrews et al (U.S. Patent No. 7,020,698), Oom Temudo de Castro et al (U.S. 2005/0030904), and Cloonan et al (U.S. Patent No. 5,345,444), independently or in combination, do not teach or suggest each element of independent claim 19.

Claims 19-20 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn, in view of Busche, in view of Alfonsi, in view of Andrews, in view of Oom Temudo de Castro, further in view of Cloonan. Appellants respectfully traverse the rejection as follows.

The Hahn reference was cited in the Final Office Action as teaching receiving a client request (Page 2). The Hahn reference does not appear to teach or suggest, "applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service," as provided, in part, in independent claim 19. As such, the Hahn reference does not teach or suggest each element and limitation found in independent claim 19.

From Appellants' review, the Busche reference does not appear to cure the deficiencies of the Hahn reference. That is, the Hahn and Busche references, independently or in combination, do not teach or suggest each limitation of independent claim 19. The Busche reference is cited in the Final Office Action as teaching a method of searching the stored information to identify a plurality of service nodes (page 3). However, the Hahn and Busche references do not, independently or in combination, appear to teach or suggest, "applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service," as provided, in part, in independent claim 19.

From Appellants' review, the Alfonsi reference does not appear to cure the deficiencies of the Hahn and Busche references. That is, the Hahn, Busche and Alfonsi references, independently or in combination, do not teach or suggest each limitation of independent claim 19. The Alfonsi reference is cited in the Final Office Action as teaching an algorithm for choosing a destination node that meets the quality of service requirements and determining the minimum hop and path length and an updated algorithm used to reduce the number of eligible nodes for path calculation (page 4). However, the Hahn, Busche, and Alfonsi references do not appear to teach or suggest, "applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service," as provided, in part, in independent claim 19.

The Final Office Action notes that, Hahn, Busche, and Alfonsi fail to teach applying a clustering algorithm to the plurality of nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service (Pages 2-4). However, Page 4 of the Final Office Action cites Andrews as teaching the specified deficiencies (Col. 16, lines 33-38, "which discloses utilizing a clustering algorithm to determine node distances"). That is, the Office Action appears to compare Andrews' clustering algorithm between a *demand node* (client cluster) and a *resource node* (cache) to Appellants' applying a

clustering algorithm to a plurality of service nodes, as recited in independent claim 19.

As described herein, the Andrews reference does not appear to cure the deficiencies of the Hahn, Busche, and Alfonsi references. That is, the Hahn, Busche, Alfonsi, and Andrews references, independently or in combination, do not teach or suggest each limitation of independent claims 19. From Appellants' review, Andrews appears to teach a method utilizing a clustering algorithm between a set of *demand nodes* that receive the service, and a set of *resource nodes* that provide the service (Column 16, lines 32-38). In contrast to the *demand nodes* described in Andrews, the service nodes described in Appellants' previously submitted specification describe service nodes as nodes that provide services to other service nodes and user nodes (Page 6, lines 18-19). Therefore, the Hahn, Busche, Alfonsi, and Andrews references do not appear to teach or suggest, "applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service," as provided, in part, in independent claim 19.

From Appellants' review, the Oom Temudo de Castro reference does not appear to cure the deficiencies of the Hahn, Busche, Alfonsi, and Andrews references. That is, the Hahn, Busche, Alfonsi, Andrews, and Oom Temudo de Castro references, independently or in combination, do not teach or suggest each limitation of independent claim 19. Oom Temudo de Castro is cited in the Final Office Action as teaching measuring the distance between the subject node and reference nodes to provide the information (Page 12). Oom Temudo de Castro further appears to teach measuring network distances between a subject node and each reference node of a plurality of reference nodes selected from a network (Paragraph [0010]). However, the Hahn, Busche, Alfonsi, Andrews, and Oom Temudo de Castro references do not teach or suggest, "applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service," as provided, in part, in independent claim 19.

From Appellants' review, the Cloonan reference does not appear to cure the deficiencies of the Hahn, Busche, Alfonsi, Andrews, and Oom Temudo de Castro references. That is, the Hahn, Busche, Alfonsi, Andrews, Oom Temudo de Castro, and Cloonan references, independently or in combination, do not teach or suggest each limitation of independent claim 19. Cloonan is cited in the Final Office Action as teaching a method wherein at least one local landmark node that is on a routing path to one of the global landmark nodes (Page 12). From Appellants' review, Cloonan appears to teach that network nodes are of two types, global and local (Column 12, lines 44-48). However, the Hahn, Busche, Alfonsi, Andrews, Oom Temudo de Castro, and Cloonan references do not appear to teach or suggest, "applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service," as provided, in part, in independent claim 19.

As such, the Hahn, Busche, Alfonsi, Andrews, Oom Temudo de Castro, and Cloonan references, independently or in combination, do not teach or suggest each element in Appellants' independent claim 19. Accordingly, Appellants respectfully request reconsideration and withdrawal of the §103(a) rejection with respect to independent claim 19, as well as dependent claim 20, which depends from independent claim 19. For the purposes of this appeal, dependent claim 20, which depends from independent claim 19, discussed herein, are not argued independently, but shall stand or fall with independent claim 19.

E. The Hahn et al (U.S. 2002/0152293), Busche (U.S. Patent No. 5,805,593), Alfonsi et al (U.S. Patent No. 5,491,690), Andrews et al (U.S. Patent No. 7,020,698), Oom Temudo de Castro et al (U.S. 2005/0030904), Cloonan et al (U.S. Patent No. 5,345,444), and Matsubara (U.S. 2004/0008687), independently or in combination, do not teach or suggest each element of independent claim 19.

For the purposes of this appeal, dependent claims 21-23, which depend from independent claim 19, discussed herein, are not argued independently, but shall stand or fall with independent claim 19.

F. The Hahn et al (U.S. 2002/0152293), Busche (U.S. Patent No. 5,805,593), Alfonsi et al (U.S. Patent No. 5,491,690), Andrews et al (U.S. Patent No. 7,020,698), and Aggarwal (U.S. 2004/0221154), independently or in combination, do not teach or suggest each element of independent claim 24.

For the purposes of this appeal, dependent claims 25-29, which depend from independent claim 24, discussed herein, are not argued independently, but shall stand or fall with independent claim 24.

CONCLUSION

Appellants respectfully submit that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner and/or members of the Board are invited to telephone Appellants' attorney Edward J. Brooks III at (612) 236-0120 to facilitate this appeal.

At any time during the pendency of this application, please charge any additional fees or credit overpayment to the Deposit Account No. 08-2025.

CERTIFICATE UNDER 37 C.F.R. §1.8:
The undersigned hereby certifies that this correspondence is being electronically filed with the United States Patent and Trademark Office on

November 2, 2011

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VIII. CLAIMS APPENDIX

1. (Previously Presented) A method of searching for at least one of a service path and a service node operable to provide a requested service via a multicast tree, the method comprising:

receiving a request for at least one service;

searching stored information at a node receiving the request for at least one of a service path and a service node operable to provide the requested service;

searching the stored information to identify a plurality of service nodes operable to provide the requested service in response to a service path not existing that is operable to provide the requested service; and

applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service and to further reduce the size of the set of candidate service nodes, and

wherein the information is stored in the node by

receiving location information for the plurality of nodes;

receiving information associated with services provided by the plurality of nodes; and

storing the location information and the information associated with services.

2. (Previously Presented) The method of claim 1, wherein the stored information comprises a global information table, the global information table including at least the location information and the information associated with services provided for nodes in a distributed hash table overlay network.

3. (Original) The method of claim 2, wherein the distributed hash table overlay network is a logical representation of a physical network including the multicast tree.

4. (Original) The method of claim 3, wherein the global information table includes information for nodes physically close in the physical network.

5. (Original) The method of claim 1, wherein searching stored information comprises:

searching the stored information to determine whether a service path or a service node exists that is operable to provide the requested service and satisfy a QoS characteristic identified in the request, the QoS characteristic being associated with delivering the requested service.

6. (Original) The method of claim 1, wherein searching the stored information comprises:

searching the stored information to determine whether a service path exists that is operable to provide the requested service or is operable to provide at least one of the requested services if a plurality of services are requested.

7. (Original) The method of claim 6, wherein searching the stored information to determine whether a service path exists comprises:

searching the stored information to determine whether a service path exists that is operable to provide the requested service and is within a predetermined distance to a node requesting the service.

8. (Canceled).

9. (Canceled).

10. (Original) The method of claim 1, wherein the request comprises information identifying a plurality of requested services and an order for delivering the requested services.

11. (Original) The method of claim 1, wherein the request comprises information identifying at least one requested service and at least one QoS characteristic associated with delivering the requested service.

12. (Original) The method of claim 1, wherein searching stored information comprises searching stored information for at least one of a service path and a service node operable to provide the requested service via a multicast in an application layer multicasting network.

13. (Withdrawn) A method of requesting a service in an application layer multicasting network, the method comprising:

generating a request for a service including at least one requested service and at least one QoS characteristic associated with delivering the at least one service; and

transmitting the request to a node in a distributed hash table overlay network.

14. (Withdrawn) The method of claim 13, wherein transmitting the request to a node comprises:

determining location information for a node generating the request;

hashing at least a portion of the location information to identify a node in the distributed hash table overlay network to transmit the request; and

transmitting the request to the identified node in the distributed hash table overlay network.

15. (Withdrawn) The method of claim 14, wherein determining location information comprises:

determining a first distance from the node generating the request to at least one global landmark node;

determining a second distance from the node generating the request to at least one local landmark node proximally located to the node; and

determining location information for the node based on the first distance and the second distance.

16. (Withdrawn) The method of claim 13, wherein the overlay network includes a plurality of nodes storing information regarding location information and services provided by the plurality of nodes in the multicast network, such that each node in the

overlay network stores location information and services provided for nodes physically close in the multicast network.

17. (Withdrawn) The method of claim 13, further comprising:

receiving a list of a set of candidate nodes operable to satisfy the request; and

selecting one of the candidate nodes to construct a service path from a node transmitting the request to the selected candidate node for receiving the requested service.

18. (Withdrawn) The method of claim 17, wherein selecting one of the candidate nodes comprises:

measuring distances to each of the candidate nodes;

determining a metric associated with the at least one QoS characteristic; and

selecting one of the candidate nodes closest to the node requesting the service and operable to satisfy the at least one QoS characteristic.

19. (Previously Presented) A method of storing information in a node in an application layer multicast network, wherein the method comprises:

receiving location information for a plurality of nodes;

receiving information associated with services provided by the plurality of nodes;

storing the location information and the information associated with services in a table, wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node, and the at least one local landmark node is on a routing path to one of the global landmark nodes;

searching stored information at the node for at least one of a service path and a service node operable to provide the requested service and to identify a plurality of service nodes operable to provide the requested service in response to a service path not existing that is operable to provide the requested service; and

applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service and to further reduce the size of the set of candidate service nodes.

20. (Original) The method of claim 19, further wherein the at least one local landmark node is proximally located to a respective node of the plurality of nodes.

21. (Original) The method of claim 19, further comprising:

storing a QoS characteristic associated with at least one of the plurality of nodes in the table.

22. (Original) The method of claim 19, further comprising:

storing at least one of a node identifier and a service path identifier for each of the plurality of nodes in the table.

23. (Original) The method of claim 19, wherein receiving location information for a plurality of nodes comprises receiving location information for a plurality of nodes, the nodes being located physically close in the network.

24. (Previously Presented) A node in a network comprising:

means for receiving a request for at least one service, and

means for searching stored information at the node for at least one of a service path and a service node operable to provide the requested service, and the searching further comprises searching the stored information to identify a plurality of service nodes operable to provide the requested service in response to a service path not existing that is operable to provide the requested service; and

means for applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service and to further reduce the size of the set of candidate service nodes.

25. (Original) The node of claim 24, wherein the stored information comprises a global information table, the global information table including at least location

information and information associated with services provided for nodes in a distributed hash table overlay network.

26. (Previously Presented) The node of claim 25, wherein the distributed hash table overlay network is a logical representation of a physical network.

27. (Original) The node of claim 26, wherein the global information table includes information for nodes physically close in the physical network.

28. (Previously Presented) The node of claim 24,

wherein the searching in response to a service path not existing further comprises searching in response to the service path not existing that is operable to provide the requested service and that is operable to provide at least one predetermined QoS characteristic.

29. (Canceled).

30. (Withdrawn) A computer system comprises:

a processor operable to determine a physical location of the computer system in a peer-to-peer network by determining distances to at least one global landmark node and at least one local landmark node proximally located to the computer system in the peer-to-peer network; and

a memory operable to store location information and information identifying service provided for a plurality of nodes in the peer-to-peer network.

31. (Withdrawn) The computer system of claim 30, wherein the stored information comprises location information and information identifying service provided for a plurality of nodes physically close in the peer-to-peer network.

32. (Withdrawn) The computer system of claim 31, wherein the processor is operable to hash the location information to identify a node in the overlay network to transmit the location information.

33. (Withdrawn) The computer system of claim 32, further comprising a network interface operable to transmit the location information to the identified node in the overlay network.

34. (Withdrawn) The computer system of claim 31, wherein the processor is operable to search the memory to identify a service path or a service node operable to provide a requested service in a multicast network using the peer-to-peer network.

35. (Previously Presented) A non-transitory computer readable medium storing computer software, the computer software comprising instructions performing:

receiving a request at a node for at least one service;

searching stored information at the node for at least one of a service path and a service node operable to provide the requested service;

searching the stored information to identify a plurality of service nodes operable to provide the requested service in response to a service path not existing that is operable to provide the requested service; and

applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service and to further reduce the size of the set of candidate service nodes.

36. (Previously Presented) The non-transitory computer readable medium of claim 35, wherein the searching in response to a service path not existing that is operable to provide the requested service further comprises performing the searching for the plurality of service nodes in response to both the service path not existing that is operable to provide the requested service and that is operable to provide at least one predetermined QoS characteristic.

37. (Canceled).

IX. EVIDENCE APPENDIX

X. RELATED PROCEEDINGS APPENDIX